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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,065	11/24/2003	Johannes Catharinus Hubertus Mulkens	081468-0306886	9148
909	7590	04/05/2006	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP			KIM, PETER B	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2851	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/719,065

Applicant(s)

HUBERTUS MULKENS ET AL.

Examiner

Peter B. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/866,875.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Applicant's arguments filed on Jan. 17, 2006 have been fully considered. In response to applicant's arguments, the finality of the previous office action is withdrawn.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 7, 12, 34 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 6, the claim language, "the absorption of the projection beam by the absorbent gas is substantially located at the focal point" is unclear. Does the absorption take place at the focal point?

Regarding claim 7 and 34, the claim language "evacuated" is unclear. Is an optical path removed from the apparatus?

Regarding claim 12 and 39, it is not clear how nitrogen and other inert gases are used as the absorbent gas when it is well known that such gases are used as purge gases to remove absorbent gases such as oxygen.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 9-34, 36-44, and 47-62 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishi (6,545,746).

Nishi discloses a lithographic projection apparatus and a device manufacturing method comprising a radiation system (111) a support structure (112) for supporting a patterning structure, a substrate table (114), a projection system (113) and a radiation absorber comprising a gas supply to supply an absorbent gas at a controlled concentration (col. 35, line 56 – col. 36, line 47), the absorbent gas absorbing radiation energy (col. 35, line 56 – col. 36, line 47) to absorb radiation during exposure of the radiation sensitive material to the patterned beam to adjust one of: radiation power emitted by a radiation source configured to supply radiation to the radiation system; the uniformity of energy of the beam of radiation perpendicular to an optical axis of the apparatus; radiation energy of pulses of radiation emitted by the radiation source; duration of an exposure of a target portion; and angular distribution of the radiation energy delivered by the beam of radiation (col. 35, line 55-60).

Nishi discloses the radiation absorber located proximate one of a pupil plane, a plane of patterning structure, a plane of the substrate; a conjugate plane of the pupil plane; a conjugate plane of the patterning structure plane; and a conjugate plane of the substrate plane (Fig. 9 and 10, col. 32, line 46 – col. 34, line 60). Nishi discloses absorber comprising an enclosure surrounding at least one volume and transparent to beam of radiation (Fig. 8 and 9, col. 28, lines 9-65, col. 32, line 46 – col. 34, line 60). The projection system of Nishi discloses a first aperture to allow radiation to enter and a second aperture to allow radiation to exit (Fig. 8, 9, 12 and 13)

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and the absorption by gas is substantially located at the focal point (col. 32, line 46 – col. 34, line 60, col. 35, line 56 – col. 36, line 47). Nishi also teaches gas extractor (Fig. 9). Since any gas in an enclosure will eventually reach an equilibrium in concentration, the concentration of the gas in Nishi would be symmetric about the optical axis. Nishi also discloses controlling one of the property of the absorbent gas (col. 36, lines 1-43).

Nishi discloses the absorbent gas comprising oxygen, helium and nitrogen (col. 36, lines 44-46, col. 45, lines 17-42), mixed with purge gas (col. 45, lines 17-67), and radiation comprising wavelength less than 365 nm (KrF and ArF col. 14, lines 6-20), and the detector, which detects ultraviolet light. Nishi discloses radiation-energy detector to determine energy of radiation passing through a region of interactive gas (col. 35, line 56 – col. 63, line 47, in order to control the control the amount of light and to obtain desirable amount, a detector must be provided, thus such detector is inherent to the invention of Nishi). Nishi discloses a concentration controlled volume of radiation absorbent gas to be traversed by the beam of radiation (col. 35, line 56- col. 63, line 47, and col. 45, lines 17-67). Nishi supplies and controls absorbent gas to effect a desired non-uniform attenuation (col. 35, line 56- col. 63, line 47, and col. 45, lines 17-67). Nishi discloses a device (w) manufactured according to the method above.

Claims 1-7, 12-34, 36-44, and 47-62 are rejected under 35 U.S.C. 102(e) as being anticipated by JP 2003257822 (“822”).

822 discloses a lithographic projection apparatus and a device manufacturing method comprising a radiation system (20, IL) a support structure (RS) for supporting a patterning structure (R), a substrate table (WS), a projection system (PL) and a radiation absorber

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comprising a gas supply to supply an absorbent gas at a controlled concentration (Fig. 3, abstract), the absorbent gas absorbing radiation energy (Fig. 3, abstract) to absorb radiation during exposure of the radiation sensitive material to the patterned beam to adjust one of: radiation power emitted by a radiation source configured to supply radiation to the radiation system; the uniformity of energy of the beam of radiation perpendicular to an optical axis of the apparatus; radiation energy of pulses of radiation emitted by the radiation source; duration of an exposure of a target portion; and angular distribution of the radiation energy delivered by the beam of radiation (Fig. 3, abstract).

822 discloses the radiation absorber located proximate one of a pupil plane, a plane of patterning structure, a plane of the substrate; a conjugate plane of the pupil plane; a conjugate plane of the patterning structure plane; and a conjugate plane of the substrate plane (Fig. 3, abstract). 822 discloses absorber comprising an enclosure surrounding at least one volume and transparent to beam of radiation (Fig. 3, abstract). The projection system of 822 discloses a first aperture to allow radiation to enter and a second aperture to allow radiation to exit (Fig. 3, abstract). and the absorption by gas is substantially located at the focal point (Fig. 3, abstract). 822 also teaches gas extractor (Fig. 3, abstract). Since any gas in an enclosure will eventually reach an equilibrium in concentration, the concentration of the gas in 822 would be symmetric about the optical axis. 822 also discloses controlling one of the property of the absorbent gas (Fig. 3, abstract).

822 discloses the absorbent gas comprising oxygen, and helium (Fig. 3, abstract), mixed with purge gas (col. 45, lines 17-67), and radiation comprising wavelength less than 365 nm (Fig. 3, abstract), and the detector, which detects ultraviolet light. 822 discloses radiation-energy

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detector to determine energy of radiation passing through a region of interactive gas (Fig. 3, ref. 305, abstract,). 822 discloses a concentration controlled volume of radiation absorbent gas to be traversed by the beam of radiation (Fig. 3, abstract). 822 supplies and controls absorbent gas to effect a desired non-uniform attenuation (Fig. 3, abstract). 822 discloses a device (w) manufactured according to the method above.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 35, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi in view of Tanaka et al. (Tanaka) (2003/0020888).

Nishi discloses the claimed invention as discussed above; however, Nishi does not disclose radiation in the range of 5-20 nm and a detector to detect such radiation. Tanaka discloses providing EUV light to a lithographic apparatus (para 0187). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide EUV light and a detector to detect such light to the invention of Nishi in order to improve the resolution of the exposed pattern.

Claims 56-61 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Akagawa et al. (Akagawa) (6,288,769).

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Akagawa discloses in the abstract a device manufactured by a lithographic projection apparatus. Although the device of Akagawa is not manufactured according to the method of the instant application, the final product appears to be either identical or only slightly different than a product claimed in the product-by-process claims.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-7, 9, 12, 13, 15-19, 21-26, 29, 31-34, 36, 39, 40-43, and 47-62 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,538,716 (“716”). Although the conflicting claims are not identical, they are not patentably distinct from each other because the current claims are broader and thus fully met by the prior patent. For example, 716 also claims a gas composition sensor which is not claimed in the current claims.



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Claims 8, 14, 30 and 35 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 7, and 19 of U.S. Patent No. 6,538,716 (716) in view of Tanaka et al. (Tanaka). As indicated above 716 claims to an invention not patentably distinct from the current claims; however, 716 does not claim radiation in the range of 5-20 nm and in the range of less than 365 nm and a detector to detect such radiation. Tanaka discloses providing EUV light and ArF and KrF laser to a lithographic apparatus (para 0187). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide EUV light and ArF and KrF a detector to detect such light to the claims of 716 in order to improve the resolution of the exposed pattern.

### ***Response to Arguments***

In response to applicant's arguments to provide a basis for claim objections in the previous office actions, the claims are rejected under 35 U.S.C. 112. Had the independent claims not been amended to replace the term "volume" with "enclosure," the claims also would have been rejected under 35 U.S.C. 112 for lack of clarity and vague term.

Further, applicant argued the claim objections in the pre-appeal brief. For future reference, applicant is reminded that claim objections are not appealable but petitionable. The following excerpt from MPEP 706.01 is provided:

The practical difference between a rejection and an objection is that a rejection, involving the merits of the claim, is subject to review by the Board of Patent Appeals and Interferences, while an objection, if persisted, may be reviewed only by way of petition to the Director of the USPTO.

In response to applicant's arguments regarding the product-by-process claims.

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The following excerpt from MPEP 2113 is provided:

ONCE A PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS FOUND AND A 35 U.S.C. 102 /103 REJECTION MADE, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE

“The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. In *re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In *re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983) (The claims were directed to a zeolite manufactured by mixing together various inorganic materials in solution and heating the resultant gel to form a crystalline metal silicate essentially free of alkali metal. The prior art described a process of making a zeolite which, after ion exchange to remove alkali metal, appeared to be “essentially free of alkali metal.” The court upheld the rejection because the applicant had not come forward with any evidence that the prior art was not “essentially free of alkali metal” and therefore a different and unobvious product.).

*Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989) (The prior art disclosed human nerve growth factor (b-NGF) isolated from human placental tissue. The claim was directed to b-NGF produced through genetic engineering techniques. The factor produced seemed to be substantially the same whether isolated from tissue or produced through genetic engineering. While the applicant questioned the purity of the prior art factor, no concrete evidence of an unobvious difference was presented. The Board stated that the dispositive issue is whether the claimed factor exhibits any unexpected properties compared with the factor disclosed by the prior art. The Board further stated that the applicant should have made some comparison between the two factors to establish unexpected properties since the materials appeared to be identical or only slightly different.).

THE USE OF 35 U.S.C. 102 /103 REJECTIONS FOR PRODUCT-BY-PROCESS CLAIMS HAS BEEN APPROVED BY THE COURTS

“[T]he lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith.” In *re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

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Further, an excerpt from MPEP 608.01(n) is provided regarding product-by-process claims:

Note, that although 37 CFR 1.75(c) requires the dependent claim to further limit a preceding claim, this rule does not apply to product-by-process claims.

Regarding the rejection based on JP 2003-257822, because the current application is a CIP of 10/373,192, in order to claim the benefit of the earlier filing date, applicant is respectfully requested to provide evidence of support found in the earlier application for the claims in the instant application.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 8:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Peter B. Kim', with a stylized flourish at the end.

Peter B. Kim  
Primary Examiner  
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March 29, 2006